



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/586,400	04/20/2007	Hiroki Nakamura	520514.00039	3841

7590  
Quarles & Brady  
411 E. Wisconsin Avenue  
Milwaukee, WI 53202

EXAMINER
----------

CHEN, KEATH T

ART UNIT	PAPER NUMBER
----------	--------------

1712

MAIL DATE	DELIVERY MODE
-----------	---------------

09/02/2010

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/586,400	<b>Applicant(s)</b> NAKAMURA ET AL.	
	<b>Examiner</b> KEATH T. CHEN	<b>Art Unit</b> 1712	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 28 July 2010.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) 1-8 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 9-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>07/19/2006</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicants' election of Species IIA, Figs. 5-9, of the invention Group II, apparatus claims 9-16, in the reply filed on 07/28/2010 is acknowledged. Applicants designated claims 9-11 and 13-16 read into Species IIA. Applicants also considered that claims 9, 10, and 13 are generic to all Species.

The examiner agrees with claims 9, 10, and 13 are generic. However, the examiner re-considers that claim 12 (molded compact) read into Figs. 5-9. The examiner also considers the powder compact is a "powdered grain state" of claim 11.

Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

2. Claims 1-8 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected Invention group II, there being no allowable generic or linking claim. Applicant timely traversed the restriction/election requirement in the reply filed on 07/28/2010.

### ***Claim Interpretation***

The term "blast aperture" is considered inclusive of nozzle, see Applicants' Specification, page 8, 2<sup>nd</sup> complete paragraph, line 4.

The term "gas sealed heating container" is considered "utilizing a large pressure difference between a deposition chamber and a heating container", see Applicants'

Art Unit: 1712

Specification, Technical Field. In this sense the blast aperture/nozzle has to be small enough to produce a pressure differential.

The term "supply aperture" is considered inclusive a cavity where evaporation material is located, as there is no illustration in the Figures.

### ***Claim Objections***

Claim 11 is objected to because of the following informalities: "radioactive heat" should be radiation heat.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

**3. Claims 9-16 rejected under 35 U.S.C. 103(a) as being unpatentable over Roberts et al. (US 3313914 , hereafter '914), in view of Yang et al. (US 20050072361, hereafter '361).**

'914 teaches all limitations of:

Claim 9: the central annular evaporant source 10 (col. 2, lines 35-36, Fig. 1, the claimed "evaporation source apparatus") for vacuum deposition (col. 1, line 14) by sublimation from the charge slug 60 (col. 3, line 11, the claimed "sublimation evaporation material"):

a heater 24 in co-axial cylinders 56, 58 of conducting refractory material (col. 3, lines 5-8, the claimed "a heating container") Fig. 1 shows the heat from the inner portion of the heater to slug 60 is by radiation (the claimed "having an area vaporizing said evaporation material with a radiation heat from an inner surface thereof");

slug 60 ... mounted by a tungsten rod 62 (col. 3, line 13, the claimed "a holder for holding said evaporation material") Fig. 1 also shows a small contact area between slug 60 and tungsten rod 62 (the claimed "in an area where said evaporation material does not evaporate with a conduction heat from said heating container");

as Fig. 1 is for vacuum deposition, it is "emits the generated vapor toward an evaporation subject surface outside said container".

'914's central evaporant sources has an open top, therefore, does not produce a pressure differential at the top.

'914 does not teaches the other limitations of:

Claim 9: sealed-type (evaporation source apparatus), a gas sealed heating container having a blast aperture, whereby said blast aperture (emits the generated vapor toward an evaporation subject surface outside said container).

'361 is an analogous art in the field of radiant thermal evaporator (abstract, similar to '914 evaporant source) for uniform coating of a substrate (abstract). '361 teaches two sets of openings 92 and 94 (the claimed blast aperture) in heat source/shutter 30 (Fig. 9, [0073]) in an evaporator (Figs. 2-3) for the purpose of ensuring complete evaporation ([0073], last sentence). Note such these openings 92 and 94 would have produced a pressure differential of a sealed-type evaporator.

At the time the invention was made, it would have been obvious to a person having ordinary skill in the art to have added a shutter 30, as taught by '361, to the apparatus of '914, for the purpose of ensuring complete evaporation, as taught by '361 ([0073], last sentence). Note the shutter 30 includes blast apertures and resulted a seal-type evaporation source.

For claim 10 (besides the limitations already discussed in claim 9), Fig. 1 of '914 shows the heat from the inner portion of the heater to slug 60 is by radiation in contactless state.

For claim 11 (besides the limitations already discussed in claim 10), '361 further teaches coating material 28 can be powder or slugs, among other forms ([0065], 5<sup>th</sup> sentence).

Art Unit: 1712

At the time the invention was made, it would have been obvious to a person having ordinary skill in the art to have replaced the slug 60 of '914 with powdered coating material, as taught by '361, for its suitability with expected results. The selection of something based on its known suitability for its intended use has been held to support a *prima facie* case of obviousness. MPEP 2144.07.

For claim 12 (besides the limitations already discussed in claim 10), '914 teaches compacted powder slug (col. 3, lines 11-13, the claimed "molded compact").

For claim 13, as Fig. 1 shows a small contact area between slug 60 and tungsten rod 62 (the claimed "said evaporation material does not evaporate due to a conduction heat from said heating container").

For claims 14 and 15, the combined apparatus intrinsically would have had material deposited at the openings 92 and 94 (imported from '361) that leads to increased pressure differential (therefore, the claimed "the gas sealing property of said supply aperture formed in said heat container is maintained due to said powdered gain evaporation material or said molded compact evaporation material, supplied via said supply aperture" and "the gas sealing property of said supply aperture formed in said heat container is maintained by a solid state phase of said vapor partially re-deposited").

For claim 16: said powdered grain evaporation material is supplied to said supply aperture as the emission of said evaporation material reduces in said heating container.

'914 further teaches bolt 32 (col. 3, lines 13-14) and screw 34 (as shown in Fig. 1) that appears to be able to move slug 60. '914 further teaches feedback control by sensor (col. 3, lines 40-42) by adjusting source heater 24 for maintenance of evaporation rate at a predetermined level (col. 4, lines 30-32). '914 does not teach supply the grain evaporation material as a function of output from the sensor.

'361 further teaches a material delivery system 48 ([0061]) for maintaining a constant distance between the surface 32 of the coating material and the heat source 30 and coupled to controller 20 in accordance with the evaporation rate of the material ([0061], 11<sup>th</sup> sentence).

At the time the invention was made, it would have been obvious to a person having ordinary skill in the art to have added a material delivery system connected to the controller 20, as taught by '361, and utilize the sensor of '914 to control the slug 60 position in order to control the evaporation rate at a constant level ('914, col. 4, lines 30-32), for a suitable method of control. The selection of something based on its known suitability for its intended use has been held to support a *prima facie* case of obviousness. MPEP 2144.07.



***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KEATH T. CHEN whose telephone number is (571)270-1870. The examiner can normally be reached on 6:30AM-3 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Cleveland can be reached on 571-272-1418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/KEATH T CHEN/  
Examiner, Art Unit 1712